

What Is Claimed Is:

1. A nanosilicon light-emitting element, wherein an amorphous SiO_x film consisting of a mixture of silicon atoms and oxygen atoms is formed on a semiconductor substrate, the result is heat treated in an inert gas to form the silicon atoms into nanosilicon of about 3.0nm or less, and the result is treated with an aqueous solution of hydrofluoric acid and subjected to thermal oxidation to allow any of the three primary colors of light to be emitted at a low operating voltage at room temperature.

2. A nanosilicon light-emitting element, wherein an amorphous SiO_x film consisting of a mixture of silicon atoms and oxygen atoms is formed on a semiconductor substrate, the result is heat treated in an inert gas to form the silicon atoms into nanosilicon of about 3.0nm or less, and the result is repeatedly treated with an aqueous solution of hydrofluoric acid and subjected to natural oxidation to allow any of the three primary colors of light to be emitted at a low operating voltage at room temperature.

3. The nanosilicon light-emitting element according to claim 1, wherein the blue color of the three primary colors of light is emitted clearly and in a stable manner.

4. The nanosilicon light-emitting element according to claim 1, wherein the semiconductor substrate is a silicon substrate, and the temperature of the heat treatment is about 900 to 1200°C.

5. The nanosilicon light-emitting element according to claim 1, wherein the temperature of the thermal oxidation treatment is about 400 to 1000°C.

6. The nanosilicon light-emitting element according to claim 1, wherein the nanosilicon is formed by high frequency sputtering.

7. A method for manufacturing a nanosilicon light-emitting element, comprising the steps of:

forming an amorphous SiO_x film consisting of a mixture of silicon atoms and oxygen atoms on a semiconductor substrate;

heat treating the result in an inert gas to form the silicon atoms into nanosilicon of about 3.0nm or less; and

subjecting the result to treatment with an aqueous solution of hydrofluoric acid and thermal oxidation to allow any of the three primary colors of light to be emitted at a low operating voltage at room temperature.

8. A method for manufacturing a nanosilicon light-emitting element, comprising the steps of:

forming an amorphous SiO_x film consisting of a mixture of silicon atoms and oxygen atoms on a semiconductor substrate;

heat treating the result in an inert gas to form the silicon atoms into nanosilicon of about 3.0nm or less; and

subjecting the result repeatedly to treatment with an aqueous solution of hydrofluoric acid and natural oxidation to allow any of the three primary colors of light to be emitted at a low operating voltage at room temperature.

9. The method for manufacturing a nanosilicon light-emitting element according to claim 7, wherein the blue color of the three primary colors of light is emitted clearly and in a stable manner.

10. The method for manufacturing a nanosilicon light-emitting element according to claim 7, wherein the semiconductor substrate is a silicon substrate, and the temperature of the heat treatment is about 900 to 1200°C.

11. The method for manufacturing a nanosilicon light-emitting element according to claim 7, wherein the temperature of the thermal oxidation treatment is about 400 to 1000°C.

12. The method for manufacturing a nanosilicon light-emitting element according to claim 7, wherein the nanosilicon is formed by high frequency sputtering.

13. The nanosilicon light-emitting element according to claim 2, wherein the blue color of the three primary colors of light is emitted clearly and in a stable manner.

14. The nanosilicon light-emitting element according to claim 2, wherein the semiconductor substrate is a silicon substrate, and the temperature of the heat treatment is about 900 to 1200°C.

15. The nanosilicon light-emitting element according to claim 2, wherein the temperature of the thermal oxidation treatment is about 400 to 1000°C.

16. The nanosilicon light-emitting element according to claim 2, wherein the nanosilicon is formed by high frequency sputtering.

17. The method for manufacturing a nanosilicon light-emitting element according to claim 8, wherein the blue color of the three primary colors of light is emitted clearly and in a stable manner.

18. The method for manufacturing a nanosilicon light-emitting element according to claim 8, wherein the semiconductor substrate is a silicon substrate, and the temperature of the heat treatment is about 900 to 1200°C.

19. The method for manufacturing a nanosilicon light-emitting element according to claim 8, wherein the temperature of the thermal oxidation treatment is about 400 to 1000°C.

20. The method for manufacturing a nanosilicon light-emitting element according to claim 8, wherein the nanosilicon is formed by high frequency sputtering.